FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 319. (No. 6, Vol. VII.) FEBRUARY 5, 1915. [Registered at the G.P.O. as a Newspaper.] [Weekly, Price 3d. Post Free, 3½d.

Flight.

Editorial Office: 44, ST. MARTIN'S LANE, LONDON, W.C.

Telegrams: Truditur, Westrand, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free.

United Kingdom ... 15s. 0d. Abroad ... ... 20s. 0d.

CONTENTS.

EDITORIAL COMMENT.

Enemy Air-Raiders as Criminals.

Great Britain is not alone in experiencing visits from enemy aircraft, the pilots of which, contrary to all written and unwritten laws of civilized warfare, drop bombs on unfortified places. It is the same in France and Russia, in both of which countries non-combatants, women, and children have been indiscriminately made the victims of German "kultur." The reported action of the Russian Government in respect to these raiders is a step in the right direction. Our Ally has decided upon a course on which it is to be heartily congratulated, and one that should be followed by the rest of the Allies, our own country included. It is to the effect that acting in conformity with the general spirit of the international conventions in which the rules of warfare are laid down, the bombardment of an unfortified town is henceforth to be treated as an act of piracy, and that persons taking part in such acts will be considered pirates, notwithstanding any claims they may make to be treated as belligerents.

The adventure which has led up to this decision is the recent dropping of bombs from a German dirigible on Libau, which, while one of the principal ports of Russia, long ago ceased to be a fortified place. Fortunately the raider in this case was rendered *hors de combat* and fell into the sea, the crew being captured by Russian torpedo boats. It is this little lot which is to be treated as outlaws without the benefit of the privileges extended to prisoners of war. In other words, they are to be tried on a charge of murder or attempted murder.

The decision of the Russian Government will, it is to be hoped, be carried through to the end, as although to hang a few of these gentry may, outside the realms of "Kultur," appear to be drastic, nothing is more likely to give the Huns furiously to think than placing their picked men upon the same plane as murderers. That the meting out of such punishment will have the world's approval there can be little doubt.

As the *Novoe Vremya*, one of Russia's leading newspapers points out, "Legal reprisals are the only means in our hands when fighting against German savagery. We cannot reply by the same acts, nor is it any use to threaten. Let us take advantage of this incident to pass from words to deeds. Whatever the sentence passed, we should communicate it to the German Government, with the notice that the Allies will so act whenever the laws of war are broken. Perhaps, when they know that their officers run the risk of dying shameful deaths as criminals the heads of the German and Austrian Armies will cease sending them against peaceful inhabitants of undefended towns."

* * *

Making Enemies Instead of Friends.

Germany, as we all know, is making almost frantic efforts to win over to her side the more important neutral countries. It would seem, however, that, from our point of view, the more of these air-raids the Huns indulge in the less chance will they have of securing friends, the effect being rather to render more intense the feeling of abhorrence that was first raised by the murder in cold blood of innocent people, and the destruction of priceless treasures, in Belgium and France. Thus, practically the whole of the American press is unanimous in condemning the raid on the East coast, to which some extracts which we gave last week testify, it being also pointed out by many of the editorial writers that the Germans will suffer very long after the war is over from the hideous impression created by these attacks upon unfortified places.

The *New York World*, for example, considers "that such airship raids are worse than useless. They accom-

plish no military purpose, and the wanton slaughter of women arouses a world-wide resentment. . . . The German military authorities seem to forget that the war is not going to last for ever, and that when it is over Germany will have to live in the world with all the other nations. Not only does Germany gain nothing by such attacks, but in the end they will cost her dear." Under the heading "A Disgrace to Civilisation," the *New York Tribune* describes the raid "as a wanton and brutal disregard of Hague rules and humane principles," and adds that "it belongs with the worst acts of German militarism in the present war." Similarly, the *New York American* remarks that "without prejudice, even without indignation, the nations of the world may well ask themselves what possible good can come of such wanton raids. . . . . There was reason for the British aeroplane raid on the hangars at Cuxhaven. . . . But sailing on through the black night to drop bombs on a baby's crib is but a sorry use to make of war's opportunities for valour and personal courage."

We could elaborate such expressions of opinion almost *ad infinitum*, but it is unnecessary. The time will come, and that in the not far distant future, when the Huns will have to render an account for all their "frightfulness" and savagery. In the meantime, the decision of the Russian authorities in regard to the treatment of those participating in these excursions helps to emphasise the iniquity of the proceeding. No doubt the raids are an outstanding admission of not only growing weakness, but of the lowest depths of desperation.

* * *

Who are the Scaremongers?

There appears once again to have been a mild alarm on Monday evening in connection with the reported approach of hostile aircraft in the vicinity of the Metropolis. A rumour having reached Woolwich that five Zeppelins had been seen over Hornchurch, Essex, the town and Arsenal were immediately thrown into darkness. Shortly afterwards, however, the order to extinguish lights was cancelled, and the town resumed its normal aspect. This did not, however, prevent the rumour extending to London, where the special constables were called out, only to be almost as quickly dismissed, it being subsequently stated that the aircraft had turned back.

It would be worth a considerable amount of trouble to trace home the origin of such scares, and deal with the offender under military law. While we always admit the possibility of a raid over the Metropolitan area, its probability is not so great as many people would have us believe. If one is attempted, we shall expect our authorities to put their defensive preparations into action in such a way as not to unduly alarm the public, who have already been officially instructed that the best thing to do on hearing any unusual noises in the air is to get within four walls as quickly as possible, and moreover to betake themselves to the lower parts of the house.

As we have said, there need be no haunting alarm in regard to these threatened raids. The individual chances of being concerned directly in them is decidedly small. Apart from the military preparations, everything is being done to meet the eventuality by the Commissioner of the Metropolitan Police, the L.C.C., and others in authority.

In Paris the authorities have just issued some further instructions in the event of their being also favoured with the Huns' attentions. These are of a character in keeping with French temperament, and include the following details :—"In such an eventuality, whether by day or by night, the population of Paris and in the Department of the Seine will be warned by blasts of horns from the fire-stations of the different quarters and communes, alternating with the bugle-call of danger (*garde a vous*). Should the alarm be at night, all lights will be extinguished. Private persons are warned at the first bugle blasts to return home with all speed, or to take refuge under arches. A second bugle blast from the fire-stations will proclaim that the danger is past."

* * *

Educating the Public in Aircraft Design.

It is announced that in order that the public may become familiar with the various types of aircraft, both British and hostile, "it is intended to issue from the Home Office a number of posters on which will be depicted Zeppelins and Taubes and British aircraft." The posters, which will supersede one which the Anti-Aircraft Department of the Admiralty had prepared for exhibition, have been approved by the Admiralty and the War Office. "When the posters have been printed they will be very widely distributed, and it is hoped that the public—who are sometimes disturbed by the passage of one of our own aeroplanes—will note the essential differences between our own aircraft and those of the enemy."

To readers of FLIGHT the new poster will hardly be necessary, for we have already devoted considerable space to illustrations as well as particulars of all types of aircraft, including those of the Allies as well as those of the enemy. Moreover, the official poster, if confined to the type of airship and aeroplane mentioned above, will give quite an erroneous idea of the variety of the enemy's aerial fleet, which, as anyone with even the slightest knowledge of aeronautics and aviation knows, is by no means restricted to Zeppelins and Taubes.

THE FLYING SERVICES FUND.

FROM the further additions to the list of subscriptions on page 93, received for this splendid fund by the Royal Aero Club, there are a couple of donors with £100 each, viz., the Sunbeam Motor Car Co. and J. Samuel White and Co., whilst £50 has been given by Mr. W. M. G. Singer. A good example for every mayor throughout the country to follow has been set by the Mayor of Loughborough with a donation, and it is a source of genuine pleasure to see amongst the names of subscribers that of Mrs. de Beauvoir Stocks. The ball has hardly been set rolling as yet, as the general public have not yet realised the great and vital cause which they are called upon to support, and we look forward to the response gradually growing to such an adequate total that the inaugurators and organisers of the Fund may feel they are associated with a real live undertaking. Every subscription, however small, will be welcomed. It is the spirit of cheerful giving which is the main point. We hope to see the name of every reader of FLIGHT inscribed in due course on this new "Roll of Honour" to our Flying Services; and remember, every donation, however modest, so that it is according to means, is as good as the largest sum that can be asked for.

Subscriptions should be sent to The Flying Services Fund, Royal Aero Club, 166, Piccadilly, London, W., or to Barclay and Co., Ltd., 1, Pall Mall East, S.W.

TUITION BY MOONLIGHT.—From the original drawing by C. Fleming Williams. This charming picture depicts Mr. Rowland Ding of the Seaplane School, Windermere, giving lessons by moonlight over Lake Windermere—work unique to this special school.

Dr. Glazebrook on Stability.

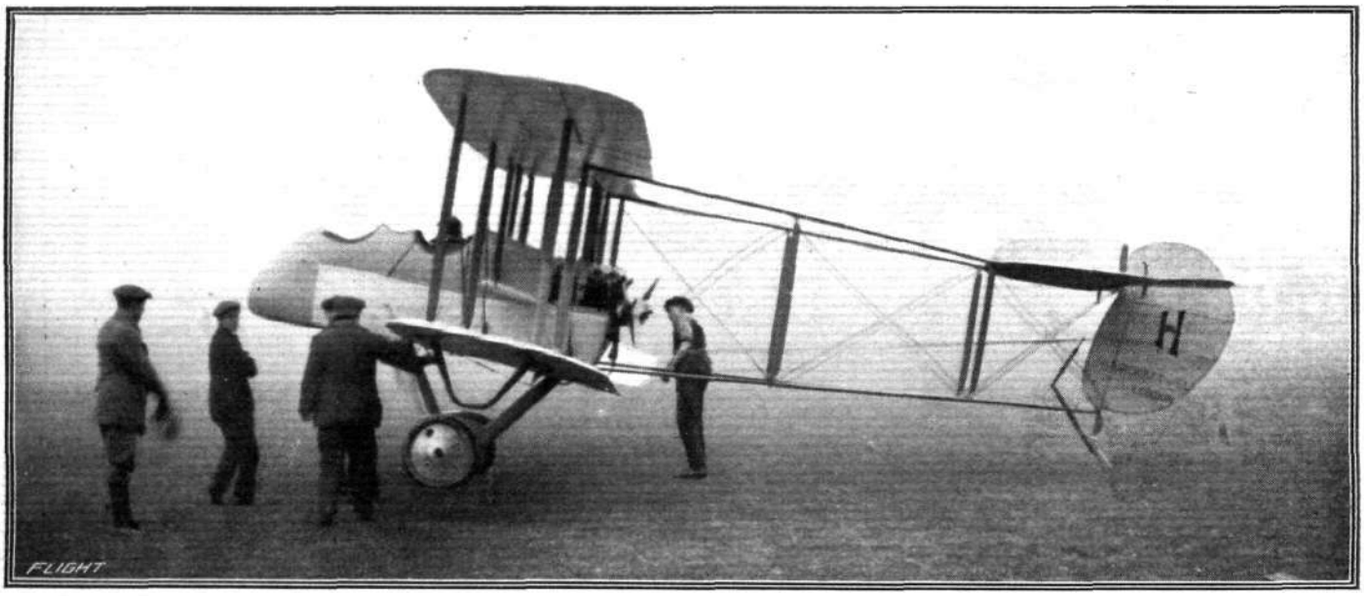
IN his second lecture on "Aerial Navigation" before the Royal Institution last Saturday, Dr. R. T. Glazebrook said that the high degree of stability of the British aeroplanes now used in the war had been secured by measuring forces that deflected the machine and by securing complete control for the pilot through the exact adjustment of the rudder, the vertical fins, and the form of the wings, which might be flexible or fitted with movable flaps to resist pressure in certain directions. While stability depended much on the skill of the pilot, the skill required was much diminished in a stable machine. Automatic stability based on gyrostatic and other aids had not proved satisfactory, but inherent stability was attained through bringing counteracting forces to bear against gusts and removing factors causing oscillation.

THE AIRCRAFT MANUFACTURING CO.'S NEW GUN-CARRYING BIPLANE.

PROBABLY no other type of aeroplane presents greater difficulties and more complex problems to be solved than does the propeller or "pusher" type, and when a new machine of this class is produced one may be perfectly certain that the reason for its appearance is not that the design of a pusher offers a short cut to success, but that there is a demand existing for a machine of this type for special purposes. The reasons which make the design of a propeller biplane a matter of great difficulty may not be immediately apparent, but they are very real, and some may be briefly referred to. In the first place, there is a question of side areas which must be carefully proportioned if spiral instability is to be avoided. A very deep *nacelle*, while possessing the advantage of protecting the occupants against the rush of air, and at the same time giving a better stream-line, necessitates larger vertical surface in the tail-fin and rudder. Large vertical surfaces for a given weight again necessitate very careful arrangement of these surfaces in relation to the centre of gravity, which latter must of course also be in its proper position relatively to the main planes. Again, the shape of the *nacelle* enters very considerably into the question, as a *nacelle* having curved sides would obviously not have the same effect in a relative side-wind as one with perfectly flat sides of the same projected side area.

By making the *nacelle* low the side area may be reduced, but then the difficulty enters of providing the necessary clearance between the ground and the propeller, if the latter is to be kept of the desired diameter. This difficulty can, of course, be overcome by lengthening the struts of the under-carriage, but practical considerations put a limit to the length it is advisable to make these members if extra head resistance and a "stilty" chassis are to be avoided. The arrangement of the engine in the rear of the *nacelle* is another problem which has to be dealt with. In order to make the *nacelle* of good stream-line form it should taper towards the rear, but where an air-cooled engine is used provision must at the same time be made for at least a portion of the cylinders to receive the necessary amount of draught to keep them from overheating, and this arrangement will partly spoil the stream-line form of the *nacelle*. Owing to the proximity of the tail planes to the propeller in an engine-behind machine, the effect of the slip stream on the former is a factor that cannot be neglected, and for which allowances must be made in the design and position of the tail planes.

In our photographs is seen the new biplane designed by Mr. G. de Havilland, and built by the Aircraft Manufacturing Co., Ltd., which is an attempt to produce an aeroplane capable of being used as a fighting machine carrying a gun, and at the same time being reasonably stable and sufficiently fast to meet the requirements of the military authorities. Whether Mr. de Havilland has completely achieved his object the trials will show, but there can be no doubt that as an experiment the new machine gives promise of great possibilities. During its preliminary trials Mr. de Havilland flew it repeatedly with his hands off the controls, and when he did a turn, the machine automatically banked to the right degree for the speed and the radius of the curve. Thus there seems little doubt that the stability of the new biplane is all that can be desired in a machine that does not lay claim to being absolutely inherently stable.



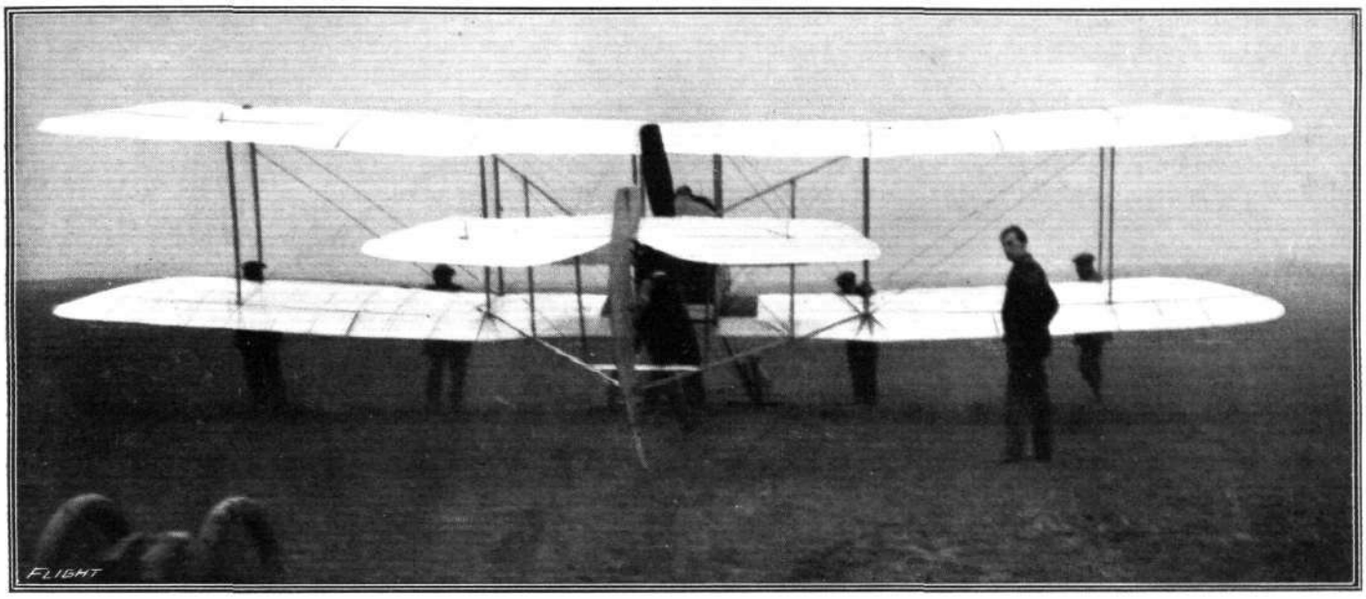
Side view of the Aircraft Co.'s new biplane. "Flight" Copyright.

As regards speed, this has not been definitely determined yet, as the propeller fitted during the preliminary trials was not quite suitable, allowing the 70 h.p. Renault engine to run at much higher revolutions than those for which it is designed. Even under those unfavourable conditions the machine showed a speed of over 70 m.p.h. as registered on the speed indicator, so that there is every reason to believe that when a suitable propeller has been fitted this figure will be considerably exceeded. This is distinctly good, especially as the machine was originally designed for an engine of 80 h.p. When landing the speed appeared to us to be quite low for so substantial a machine, although the designer did not at any time attempt to land it at its absolute minimum speed.

In its general appearance the new gun-carrier is of very pleasing lines, and, as one expects from a firm of so

high standing as the Aircraft Manufacturing Co., Ltd., the workmanship is excellent. In later machines of this type several of the constructional details will be altered, as the experience obtained with the present one suggests

covering slopes down to allow of pointing the gun with which it is intended to fit the machine at a fairly steep downward angle. Pilot's and passenger's seats are arranged tandem fashion, the pilot sitting at the rear in order



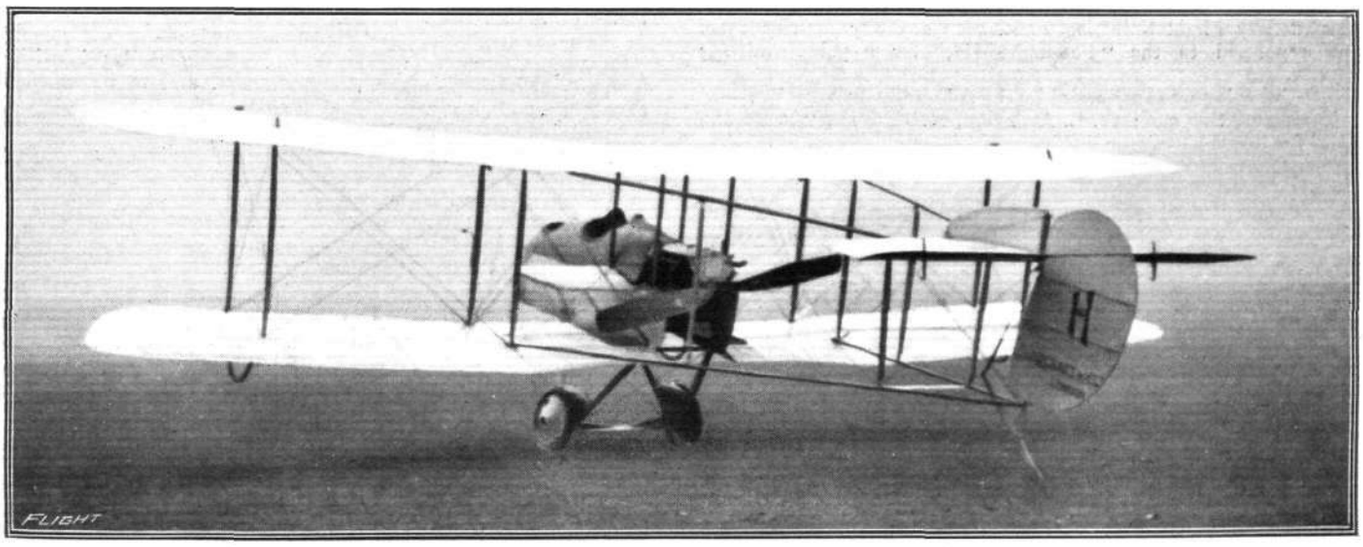
Rear view of the Aircraft Co.'s new biplane. "Flight" Copyright.

various improvements, but the general arrangement will be retained.

From the accompanying photographs it will be seen that the main planes have a very pronounced dihedral angle, which does not, however, extend throughout their whole length, but is confined to the outer ends of the planes from the second pair of inter-plane struts. The centre sections of the wings are straight. The end sections of the planes are attached to the centre sections by steel clips, and as upper and lower end sections are identical, one spare wing may be used to replace either

to allow the gunner a free range. In the rear of the *nacelle* is mounted a 70 h.p. Renault engine in such a manner that the tops of the cylinders project sufficiently far above the *nacelle* covering to ensure good cooling. The bottom of the rear portion of the *nacelle* is covered with an aluminium shield in order to preserve as far as possible the stream-line form, and as the two halves of the lower plane are attached to the sides of the *nacelle* and do not run right across it the air has here a comparatively unrestricted flow.

The tail planes are carried on an outrigger of four steel



Three-quarter rear view of the new Aircraft Co. biplane. "Flight" Copyright.

a lower or an upper extension in case of damage by simply changing the fittings. The *nacelle*, which is of rectangular section with slightly curved sides formed by longitudinal stringers, projects forward from the main planes a considerable distance, and in the nose the top

tubes, and the fixed horizontal tail plane is hinged to the two upper of these tubes, while at the rear it is attached to the vertical rudder post by a pin joint in such a manner that the angle of incidence may be easily altered to compensate for any alteration of the weight

carried in the nose of the *nacelle*. To the trailing edge of the fixed tail plane is hinged a divided elevator, whilst horizontally the machine is directed by a partly balanced rudder pivoting round the vertical tubular rudder post. The fixed vertical surface of the tail consists of a small fin placed on top of the fixed plane. A pivoted tail skid mounted on a downward extension of the rudder post protects the tail planes against contact with the ground, and as there is a considerable weight on the tail when rolling the skid acts at the same time as a very effective brake. In order to further reduce the speed on landing an air brake is fitted behind the pilot's seat, consisting of two small planes mounted on a tube resting on the upper longitudinals of the *nacelle*. This air brake is operated from the pilot's seat by means of a small hand lever, and works by being turned broadside on, thus offering a certain amount of extra head resistance. Control is by means of a single lever and a foot bar. Both upper and lower planes are fitted with *ailerons*.

The under-carriage is of the simplest possible type, and appears to be very suitable. It consists of two pairs of struts forming two "V's," the apices of which are connected by two transverse members placed a short distance apart, and between which are accommodated the stub axles. Springing is provided by coil springs, and the rebound is taken by a piston working in a cylinder filled with oil. This type of under-carriage has proved very efficient, and has, among other advantages, that of preventing almost entirely the bouncing to which machines fitted with the ordinary rubber shock absorbers are liable. By undoing two bolts one of the wheels and its shock absorbing arrangement may be removed for inspection or repair. A stream-line casing encloses the the whole shock absorber, and the under-carriage therefore offers a minimum of head resistance. As the wheel track is comparatively narrow, small skids are fitted near the tips of the lower plane in order to protect this in case the machine rolls slightly over to one side.

Although the new machine has not, up to the time of writing, had an opportunity of being exhaustively tested, the preliminary trials were very encouraging, and Mr. de Havilland is to be congratulated upon his attempt to solve a difficult problem, and the Aircraft Company for the way in which they have carried out the construction.

THE BRITISH AIR SERVICES.

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, *it is not repeated in this column.*

Royal Naval Air Service.

THE following was announced by the Admiralty on the 28th ult. :

Temporary Surgeon A. G. Evans, M.B., to the "Pembroke III," for Royal Naval Air Service. To date Jan. 27th.

The following was announced by the Admiralty on the 29th ult. :—

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, with seniority January 28th, and appointed to the "Pembroke III," for Royal Naval Air Service: C. Tollemache, M. Hood, W. H. Dunn, and L. H. Foster Irving.

The following was announced by the Admiralty on the 30th ult. :—

Chief Petty Officer H. R. Hopperton promoted to the rank of Probationary Flight Sub-Lieutenant, with seniority January 15th, and appointed to the "Pembroke III," for Royal Naval Air Service.

The following was announced by the Admiralty on 1st inst. :—

Temporary Surgeon: W. L. Anderson, M.B., to the "Pembroke III," for Royal Naval Air Service. To date Jan. 31st.

The following appeared in a supplement to the *London Gazette* issued on the 3rd inst. :—

War Office. Commands and Staff.—Railway Transport Officer (graded for purpose of pay as a Staff Captain): Lieut. Frederick William Abraham, Royal Naval Air Service, and to be temporary Captain. Dated Dec. 10th, 1914. (Substituted for the notification which appeared in the *London Gazette* of Jan. 1st, 1915.)

The following was announced by the Admiralty on the 3rd inst. :—

Second Lieuts. (Royal Marines): J. H. Dalbiac, R. F. L. Ogston, A. R. Collen, and L. E. Innes-Baillie to the "Pembroke III" for Royal Naval Air Service. To date on joining.

Royal Flying Corps (Military Wing).

THE following appeared in the *London Gazette* issued on the 29th ult. :—

The undermentioned appointment is made:

Flying Officer: Lieut. D. Corbett-Wilson, Special Reserve. Dated Oct. 9th, 1914.

3rd Batt. the Hampshire Regt.—Lieut. Henry J. Collins is seconded for service with the Royal Flying Corps. Dated Dec. 4th, 1914.

The following appeared in the supplement to the *London Gazette* of the 1st inst. :—

The undermentioned appointments are made:

Wing Commander: Brevet Major (temporary Lieut.-Col.) F. H. Sykes, 15th (the King's) Hussars, a General Staff Officer, First Grade, and to be temporary Colonel whilst employed as Second in Command of the Royal Flying Corps. Dated Dec. 21st, 1914.

Flying Officer: Second Lieut. M. McB. Bell-Irving, Special Reserve. Dated Dec. 29th, 1914.

Special Reserve. Supplementary to Regular Corps.—The undermentioned temporary Second Lieutenants to be Second Lieutenants; dated Jan. 1st, 1915: F. W. Polehampton, from 14th Reserve Regiment of Cavalry; E. G. S. Walker, from 6th (Service) Batt. the Border Regt. The undermentioned to be Second Lieutenants on probation: Stanislause Cruess Callaghan; dated Jan. 15th, 1915. William Arthur Grattan Bellew; dated Jan. 17th, 1915. Vyvyan Arthur Hemming Robeson; dated Jan. 18th, 1915. Montague Vivian Morgan, Frank Jolly, Alan Mushet Morison, and Thomas E. Robertson; dated Jan. 25th, 1915.

The following appeared in the *London Gazette* of the 2nd inst. :—

The undermentioned appointment is made :—

General Staff Officers, Second Grade.—Capt. H. H. Hughes-Hallett, the Prince of Wales's (North Staffordshire Regt.), from the Third Grade, vice Major W. G. H. Salmond, Royal Artillery. Dated Jan. 26th, 1915.

The undermentioned appointments are made :—

Squadron Commander: Major W. G. H. Salmond, Royal Artillery, from a General Staff Officer, Second Grade, and to be seconded. Dated Jan. 26th, 1915.

Flying Officer: Capt. Bernard E. Smythies, Royal Engineers. Dated Jan. 20th, 1915.

Special Reserve. Supplementary to Regular Corps.—The date of appointment of Sec. Lieut. James Valentine is Aug. 6th, 1914, and not as stated in the *Gazette* of Aug. 11th, 1914. The undermentioned to be Second Lieutenants (on probation), dated Jan. 25th, 1915: Charles Percy Ogden and Richard Hamilton Collier; dated Feb. 1st, 1915: Marwood Elton Lane and John Everard Storey.

The following appeared in a supplement to the *London Gazette* issued on the 3rd inst. :—

The undermentioned temporary appointments are made:

Flying Officer: Capt. Hugh L. Reilly. 82nd Punjabis, Indian Army. Dated Aug. 5th, 1914.

Sydney Charles Parr to be temporary Quartermaster, with the honorary rank of Lieutenant. Dated Nov. 5th, 1914.

Special Reserve. Supplementary to Regular Corps.—The undermentioned to be Second Lieutenants (on probation): Ernest Alfred Edward Wood; dated Dec. 22nd, 1914. Ernest Edward Hodgson, late Second Lieutenant 6th Dragoon Guards (Carabiniers), and Lionel Macdonald Wells Bladen; dated Jan. 19th, 1915. Louis Frederick Rudston Fell; dated Feb. 1st, 1915.

Central Flying School.

THE following appeared in the supplement to the *London Gazette* issued on the 28th ult. :—

The undermentioned appointment is made:

Instructor: Lieut. (temporary Capt.) Lord G. Wellesley, Grenadier Guards, a Flight Commander, Military Wing, vice Capt. G. B. Stopford, Royal Artillery. Dated Dec. 19th, 1914.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

THE FLYING SERVICES FUND.

Administered by The Royal Aero Club.

THE Lords Commissioners of the Admiralty and the Army Council having signified their approval, the Royal Aero Club has instituted and will administer a fund originated by M. André Michelin for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependents of those who are killed.

The fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

In view of the great utility of the work of the Flying Services, evidence of which has been repeatedly given in the official despatches of the Commander-in-Chief, the skilful and daring flights into enemy country, and the protection afforded by the continuous patrolling of our coast by aircraft, it is confidently expected that the British public will welcome this opportunity of showing their appreciation by subscribing promptly and liberally to the fund.

The Right Hon. Lord Kinnaird has kindly consented to act as Honorary Treasurer to the Fund.

Subscriptions should be forwarded to The Flying Services Fund, The Royal Aero Club, 166, Piccadilly, London, W., or to Barclay and Co., Ltd., 1, Pall Mall East, London, S.W. Cheques should be crossed "Barclay and Co., Ltd."

TULLIBARDINE, Brig.-General,
Chairman of the Royal Aero Club.

The following subscriptions have been received up to the 3rd inst. :—

	£	s.	d.		£	s.	d.
A. Michelin ...	1,000	0	0	Mrs. Krabbé ...	50	0	0
The Royal Aero Club	1,000	0	0	R. A. Wall	5	5	0
J. E. Fearce... ...	5	0	0	"Rat"	1	1	0
C. G. Grunhold ...	5	0	0	E. C. Wynne ..	0	10	6
Noel Pemberton Billing	5	0	0	Rev. Geo. H. Ford...	1	0	0
C. G. Grey	5	0	0	Mrs. Mortimer Singer	5	0	0
Flight-Lieut. F. K. McClean, R.N.A.S.	1,000	0	0	Mrs. George Cumming	5	0	0
Alec Ogilvie	250	0	0	Mrs. Carleton Tufnell	50	0	0
Griffith Brewer ...	100	0	0	Miss Primrose ...	10	0	0
Paris Singer	100	0	0	F. L. Bartelt ...	1	1	0
James Radley ...	25	0	0	J. J. Acworth ...	21	0	0
T. O. M. Sopwith	1,000	0	0	W. H. Willcox ...	5	5	0
W. Oswald Watt ...	20	0	0	G. S. Wilson ...	5	5	0
A. Mortimer Singer	100	0	0	L. S. Snell	0	12	0
Arthur Sykes ...	1	1	0	Sir Francis Layland-Barratt, Bart. ...	52	10	0
J. K. Burbridge ...	5	0	0	Washington Wood ...	5	5	0
Ernest H. Coles ...	5	0	0	W. J. Leonard ...	5	0	0
Oscar Coles	5	0	0	W. Mair Rolph ...	5	5	0
Norman Clark Neill	100	0	0	J. Duncan Pearson ...	1	1	0
A. J. A. Wallace Barr	5	5	0	Oliver W. Thomas ...	5	0	0
Editor FLIGHT ...	10	10	0	G. G. Astley... ...	1	1	0
Henry Wagner ...	5	5	0	Mr. and Mrs. W. Willoughby Price ...	5	0	0
Lady Tredegar ...	5	0	0				
The Hon. Lady Shelley	5	0	0	A. V. Roe and Co.,			
C. H. B.	2	0	0	Ltd., on account ...	100	0	0
C. Capron	1	1	0	Francis J. Sharpe ...	5	0	0
Mrs. R. S. Henderson	2	2	0	Capt. E. W. Wakefield	2	2	0
Mervyn O'Gorman, C.B.	5	5	0	The Integral Propeller			
P. J. Taylor ...	10	10	0	Co., Ltd.	10	10	0
Harry Preston ...	5	5	0	Auguste Oddenino ...	2	2	0
Charles E. Shepheard	5	5	0	J. E. Rosen	1	1	0
F. Warren Merriam...	5	0	0	Miss Rose Robinson	0	2	6
Ernest C. Bass ...	10	10	0	The Sunbeam Motor			
G. A. Scott	2	2	0	Car Co., Ltd. ...	100	0	0
Rubery, Owen & Co.	10	10	0	Willans and Robinson, Ltd.	5	0	0
Miss Curtis	2	2	0	Anonymous	1	1	0
J. and A. W. Sully and Co.	2	2	0	The Hon. Mrs. Assheton Harbord ...	5	0	0
Members and Friends of "The Midhurst Musical Society"...	5	0	0	Anonymous	1	1	0
Anonymous	1	1	0	J. J. Hewitt	2	2	0
W. N. Child... ...	5	0	0	W. M. Sherreft ...	2	2	0
J. Samuel White and Co., Ltd.	100	0	0	Mrs. and Miss Robertson	1	2	6
Miss McClean ...	10	0	0	R. W. Adamson ...	10	10	0
Eng.-Com. H. J. Meiklejohn, R.N.	2	0	0	W. R. Mosley ...	5	0	0
J. H. Picard... ...	5	5	0	Capt. and Mrs. O. Schwann	10	0	0
Stevenson and Son, Ltd.	2	2	0	Miss M. Anderson ...	0	10	6
Andrew Rutherford...	1	1	0	T. Gowland	1	1	0
Thomas Armstrong...	1	0	0	A. Norman Dugdale	5	0	0
Miss Marion M. Hill	0	10	0	Miss A. L. Bolton ...	5	0	0
W. Ridley Prentice...	10	10	0	Taylor and Francis ...	3	3	0
D. Lawrence Santoni	10	10	0	The late Maurice Leigh			
J. E. Huson... ...	5	5	0	Gardner	5	0	0
W. M. G. Singer ...	50	0	0	C. E. A. Hartridge...	10	10	0
Mrs. Webb	5	0	0	Miss Ellinor Allen ...	2	0	0
Alfred Grafton ...	5	5	0	The Mayor of Loughborough	1	1	0
Mrs. C. A. de Beauvoir Stocks ...	3	3	0	J. Lobley	3	3	0

Aviators' Certificates.

The following Aviators' Certificates have been granted :—

1045 Flight Sub-Lieut. Frank Besson, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Jan. 23rd, 1915.

1046 2nd Lieut. Selden Herbert Long (Durham Light Infantry), (Maurice Farman Biplane, Military School, Brooklands). Jan. 25th, 1915.

1047 Ernest Greenwood (Grahame-White Biplane, Grahame-White School, Hendon). Jan. 26th, 1915.

1048 Lieut. Edgar Bannatyne (19th Hussars), (Wright Biplane, Beatty School, Hendon). Jan. 26th, 1915.

1049 Flight Sub-Lieut. John Stanley Mills, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Jan. 26th, 1915.

1050 John Lloyd Williams (Hall Biplane, Hall School, Hendon). Jan. 26th, 1915.

1051 Flight Sub-Lieut. Terence Felix Driscoll, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Jan. 26th, 1915.

1052 Sergt. Hugh McKenna, R.F.C. (Maurice Farman Biplane, Royal Flying Corps, Netheravon). Jan. 17th, 1915.

1053 Flight Sub-Lieut. Frederick Joseph Rutland, R.N. (Short Biplane, Royal Naval Flying School, Eastchurch). Jan. 26th, 1915.

1054 Charles Drury Fuller (Maurice Farman Biplane, Military School, Brooklands). Jan. 28th, 1915.

1055 Edward Ernest Clarke (Maurice Farman Biplane, Military School, Brooklands). Jan. 28th, 1915.

1056 2nd Lieut. John Ronald McCrindle (7th Gordon Highlanders) (Maurice Farman Biplane, Central Flying School, Upavon). Jan. 28th, 1915.

1057 Clive F. Collett (L. and P. Biplane, L. and P. School, Hendon). Jan. 29th, 1915.

1058 Jack Oliver Cooper (Maurice Farman Biplane, Military School, Brooklands). Jan. 29th, 1915.

1059 Gerald Merton (Wright Biplane, Beatty School, Hendon). Jan. 29th, 1915.

1060 Flight Sub-Lieut. John Daniel Newberry, R.N.A.S. (Wright Biplane, Beatty School, Hendon). Jan. 30th, 1915.

1061 Flight Sub-Lieut. Graham Donald, R.N.A.S. (Wright Biplane, Beatty School, Hendon). Jan. 30th, 1915.

1062 2nd Lieut. Maximilian Knight Cooper-King (7th Batt. York and Lancaster Regt.) (Maurice Farman Biplane, Military School, Brooklands). Feb. 1st, 1915.

1063 Harold MacDonnell O'Malley (Maurice Farman Biplane, Military School, Brooklands). Feb. 1st, 1915.

Presentation to the Club.

Flight Lieut. F. K. McClean, R.N.A.S., has kindly presented to the Club a very interesting collection of photographs taken during his Hydro-aeroplane trip up the Nile at the beginning of 1914.

166, Piccadilly, W. B. STEVENSON, Assistant Secretary.

FROM THE BRITISH FLYING GROUNDS.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Monday last week, Probationary Flight Sub-Lieuts. Hallifax, Petter and Wood straights with Instructors Manton, Winter and Russell. Probationary Flight Sub-Lieuts. Digby solo straights, Driscoll landing practice, &c. Probationary Flight Sub-Lieut. Mills and Mr. Greenwood circuits, eights, &c., the latter ready for *brevet* tests.

Tuesday, Probationary Flight Sub-Lieuts. Digby, Driscoll, Mills, Walmesley and Mr. Greenwood circuits, eights, &c., afterwards Probationary Flight Sub-Lieuts. Driscoll, and Mills and Mr. Greenwood going in for and gaining R. Ae.C. certificate. Prob. Flight Sub-Lieuts. Hallifax, Petter, Hilliard solo straights, and Souray and Wood straights with Instructors Winter, Russell and Manton.

Friday, Probationary Flight Sub-Lieuts. Digby, Walmesley circuits, eights and landing practice, afterwards Probationary Flight Sub-Lieut. Walmesley doing *brevet* tests and gaining certificate in fine style. Probationary Flight Sub-Lieuts. Hallifax, Hilliard, Petter and Souray solo flights. Wood straights with Instructors Manton, Winter and Russell, and afterwards alone.

Saturday, Probationary Flight Sub-Lieutenant Wood solo straights, Souray and Irving straights with Instructors Manton and Russell, Digby, Hallifax, Hilliard and Petter solo circuits, eights, landing practice, &c.

Four certificates were secured during the week.

Beatty School.—During the past week the following pupils received instruction :—Messrs. C. Leeston-Smith (30 mins.), J. D. Newberry (35), E. T. Anstey Chave (10), P. E. Cornish (19), G. Merton (20), G. Beard (35), G. Donald (15), J. F. Roche (30), B. de Meza (10), Lieut. E. Bannatyne (31), J. H. Ormsby (27), V. E. Faning (5), Gerrit Forbes (32), H. H. Bright (15), Vickers (10), P. C. Cooper and Lieut. Broughton (20).

During the week the following pupils obtained their certificates :—Lieut. Edgar Bannatyne, Sub-Lieuts. J. D. Newberry, R.N.A.S., E. T. Anstey Chave, R.N.A.S., Grahame Donald, R.N.A.S., Cyril Leeston-Smith, R.N.A.S., and Mr. Gerald Merton.

The machines in use are two-seater biplanes, all fitted with "dual" controls, the pupils being instructed under the personal supervision of Mr. G. W. Beatty, assisted by a staff of instructors.

Hall School.—During last week on Tractor No. 3 : Straights, Davy, 20 mins. ; Waterson, 40 mins. ; McConnochie, 55 mins. On two-seater with Mr. Hall : Davy, 15 mins. ; McConnochie, 10 ; Waterson, 15 mins.

On Tuesday, Mr. Lloyd Williams, after a preliminary flight, took an exceedingly fine *brevet* on the 45 Anzani machine ; ascending to 1,600 ft. in the altitude test, concluding his "ticket" with a spiral descent. Mr. Williams obtained his ticket in 13 days' actual practice, his time totalling 1 hr. 52 mins. on the machine. Instructor for week : J. Rose.

London and Provincial Aviation Co.—Monday, last week, school out 8 a.m. Instructor M. G. Smiles, test flight, 8 mins. Messrs. Noakes, Lincoln, and England Derwin, rolling. Messrs. Laidler, Collett, Bransby Williams, and Moore, straights. Mr. Abel circuits.

Tuesday, a splendid day ; school out at 7.45 a.m., and worked continuously until dark. Mr. Abel circuits and figure eights on tractor No. 2, then collided with railings. Mr. Collett circuits and eights on No. 1, improving very rapidly and making good landings. Messrs. Moore, Laidler, Bransby Williams and Henderson straights, Messrs. Noakes and Lincoln rolling. Mr. Collett landed with No. 1 on bad ground, damaging chassis.

Wednesday and Thursday, high wind.

Friday, Mr. Collett flew for his certificate, which he obtained in excellent style, his actual flying time being three hours. Messrs. Laidler and Moore half circuits. B. Williams straights. Messrs. Noakes and Lincoln rolling.

Saturday, out 8 a.m. Messrs. Laidler and Abel circuits. Former improving rapidly. Mr. Moore half circuits. Messrs. Noakes, Bransby Williams and Derwin straights. Mr. Lincoln rolling.

Ruffy School.—Pupils receiving instruction during last week : Messrs. Aoyang, Grahame, Kenworthy, and King, under Instructors Edouard Baumann, Herbert James, and Howard James. Mr. Kenworthy making good progress. Machines : 60 h.p. Gnome-Caudron, dual control, and 45 h.p. Anzani.

Northern Aircraft Co., Ltd.

The Seaplane School, Windermere.—Messrs. W. Rowland Ding and J. J. Bland gave instruction last week to Messrs. G. L. Railton (75 minutes), A. Johnson (50), R. Buck (35), T. Hubbard (44), F. Macaski (20), Mr. A. Johnson running alone ; and Mr. R. O. Lashmar (103) completed the first half of his tests, making good banked eights and landing from 500 ft. with engine off.

Machines in use : N.A.C. "Pusher" monoplane and "Pusher" biplane. A system of changing students from the aeroplanes to the motor boat without stopping the engines has been now perfected, thus saving a lot of time.

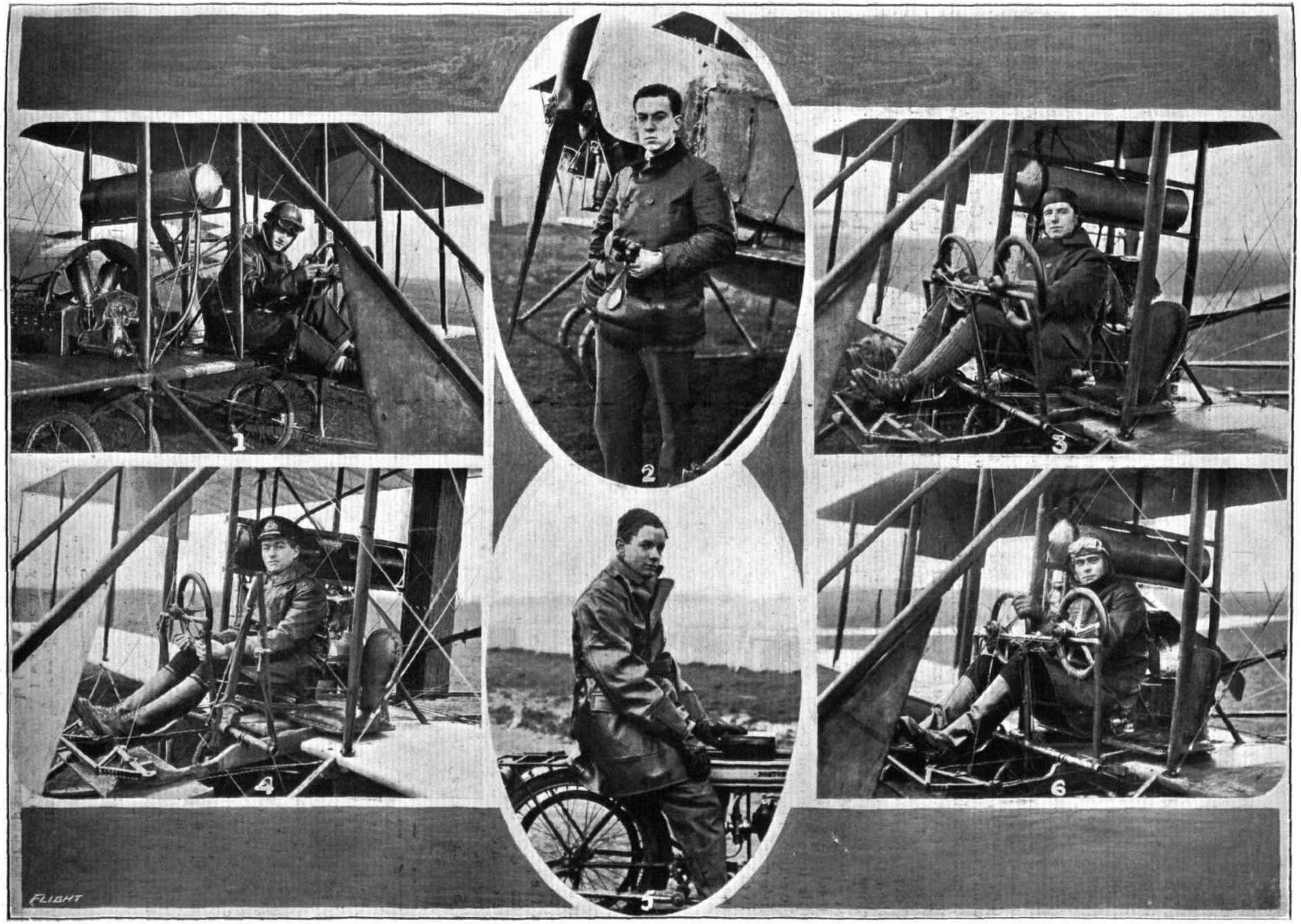
On Monday, Mr. Ding gave an exhibition to some visitors in his usual finished manner.

The weather has been excellent—hardly a day being lost during the whole week.

⊛ ⊛

"About the Seaplane School."

WHATEVER the merits of a firm's goods may be, unless they are set out in an attractive form, for a time at least they may not obtain the vogue to which they are legitimately entitled. In the little booklet just issued by the Northern Aircraft Co., of Bowness-on-Windermere, giving particulars and the advantages of their Seaplane School, this axiom has evidently been well kept in mind. The pamphlet is a delightful production, charmingly illustrated and beautifully typed—a credit alike to the Company, the designer, Mr. C. Fleming Williams, and the printer. There is not a superfluous word for the man to read who wishes to find out about the school, and it is both interesting and informative, whilst the illustrations and their arrangement are more in keeping with one of the expensive *editions de luxe* to which of late years the big publishing houses have accustomed us. Presumably the Northern Aircraft Co. will send a free copy to readers of FLIGHT communicating with them, but we would suggest an early application to avoid disappointment.



A SEXTET OF PUPILS WHO LAST WEEK SECURED THEIR *BREVETS* AT THE BEATTY SCHOOL, HENDON.—1. Lieut. E. Bannatyne. 2. Sub-Lieut. G. Donald, R.N.A.S. 3. Mr. G. Merton. 4. Sub-Lieut. E. T. Anstey Chave, R.N.A.S. 5. Sub-Lieut. J. D. Newberry, R.N.A.S. 6. Sub-Lieut. Cyril Leeston-Smith, R.N.A.S.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

THE following extracts are from the descriptive account from an "Eye-witness" present with the British General Headquarters, dated January 23rd, and issued on the 28th ult. :—

"On Tuesday, the 19th, the chief event was a successful aerial raid carried out by us against Ghistelles, some 12 miles to the west of Bruges. In spite of very misty weather and a certain amount of wind our aeroplanes reached their destination about dawn, and flying very low dropped several bombs on certain sheds which formed their objective. Exactly what damage was done it is not possible to state, but it is known to have been considerable. . . .

"Friday, the 22nd, was sunny, with some frost and not much wind; in fact, as perfect a day for aviation as can be expected at this time of year; and the Germans took advantage of the weather to make an aerial raid on a large scale against Dunkirk. The details are as follows: One of our aeroplanes—a single-seater—was on patrol duty, when the observer saw several hostile machines approaching. He at once gave chase to the first hostile machine, and opened fire on it. Meanwhile two other British machines started from the ground. It took them some little time to ascend the height of 6,000 feet at which the action in the air was proceeding, during which the British machine which had been on patrol had succeeded in driving off with its fire the two leading German machines. Ten others, however, had come up by the time that the three British machines were all in action. After the Germans had dropped several bombs over the harbour and town the whole turned and flew back towards their lines. Our aeroplanes pursued, and brought down one German machine by a bullet through one of its cylinders. The aeroplane was captured, together with its pilot and observer and eight unexploded bombs. The observer was armed with a double-barrelled pistol for firing chain shot. In face of the heavy odds against them this feat on the part of our aviators was distinctly meritorious. The damage done by the raiders was slight."

In the despatch from an "Eyewitness," dated January 27th, there was the following :—

"On Saturday the 23rd. . . . Our guns also forced an observation balloon to descend and drove off two German aeroplanes. A new type of machine approached our lines. Its novel shape evidently misled the German gunners, for on its return they opened fire on it until it signalled its identity by star-lights."

In another despatch from "Eyewitness," dated January 30th, and issued on Tuesday last, it was stated :—

"The lull in the action which took place on the 26th, after the German attacks on the 25th, has already been noted. On that day one of our aviators made a very successful reconnaissance over a section of the German line. Travelling at a low altitude, he not only obtained much useful information, but managed to drop ten bombs on the enemy's trenches. . . .

"On this day (January 29th) a German aeroplane flew over Bailleul and dropped four bombs, killing a child and wounding another child and a woman. During the whole of the week, up till and including Friday, the weather has been bright and frosty, which has been a welcome change."

In the official *communique* issued in Paris on the afternoon of the 27th there was the following :—

"In the sectors of Nieuport and Ypres there has been artillery fighting. A German aircraft has been brought down in the lines of the Belgian Army."

In the official *communique* issued in Paris on the afternoon of the 29th ult. it was stated :—

"In Belgium.—In the region of Nieuport . . . . a German aircraft was brought down by our guns."

In the *communique* issued on the evening of the same date there was the following :—

"Yesterday (January 28th) in the middle of the night Dunkirk was bombarded by several aviators, who did only insignificant material damage, but killed or wounded several persons.

"Between eleven o'clock on the night of the 28th and two o'clock this morning our aviators dropped many bombs on the German camps in the neighbourhood of Laon, La Fere, and Soissons.

"This morning a German aeroplane was forced to descend to the east of Gerbeviller. Its occupants, an officer and a non-commissioned officer, were made prisoners."

⊛ ⊛ ⊛ ⊛

THE ROYAL FLYING CORPS AID COMMITTEE.

IN a list of subscribers published on January 13th was included "Employees of the Royal Aircraft Factory," £1 9s.; a further sum of £2 11s. 6d. has also been received from "Stores, Royal Aircraft Factory."

The following are a few letters selected from among the many that have been received by Lady Henderson and the Committee of the Royal Flying Corps Aid :—

"Please accept the grateful thanks and appreciation for the parcels which we have received, from an Air-Mechanic, who for one has taken the libery of thanking you personally. The parcels have been most useful, and the warm clothing which has been received has been spoken of times out of number as being splendid and just what we need, by the A.Ms. of the R.F.C. Great thought and consideration must be used by those who decide what to put in the gift parcels. I have just finished using the shaving soap and tooth paste, which is of the best.

"Believe me to be,
"Yours truly and gratefully,
"C.R."

MY DEAR COMMITTEE,—I received your excellent gift yesterday. Everything in my parcel is truly useful. I wish to convey to you all dear people my deep sense of gratitude for your generosity and kindness in sending me such a lovely gift. We 'British Tommies' of the [name censored] Corps fear no longer the rigours of a hard cold winter than we do the Germans, when we have such a committee behind us in dear old England.

"Again thanking you for your kindness,
"I remain,
"A GRATEFUL 'TOMMY.'"

"In the Field.

"DEAR SIR OR MADAM,—To-day every one of us has been presented with a gift from your Committee, and the first thing that I wish to do is to make use of the pencil and paper which I found in my package, to write and ask you if you would please convey my most humble thanks to your Committee for their very great kindness and sympathetic feeling towards the men with the British Expeditionary Force. I am sure we cannot thank the people at home sufficiently for their kindness towards us in sending out such useful and comforting articles as are contained in the packages, and also for the woollen goods that were distributed to us a few days ago. We all know that our adjutant acknowledges with thanks all gifts sent out to us, but many, like myself, feel that our first duty on receipt of such a gift is to thank you and your Committee again for their great kindness towards us.

"Believe me to be,
"Yours most obediently,
"A SQUADRON SERJEANT-MAJOR."

FLIGHT

EDDIES.

THE following amusing account of the German Tauben has appeared in a Czechish paper published in Pilsen: "The German army possesses war Tauben (pigeons), which are not, however, employed as carrier pigeons, but are used for destroying the enemy's aeroplanes and airships. These pigeons are so trained that they seek their food on the wings of aeroplanes and airships. A small bomb is tied round the neck of these pigeons, which are then sent out, and flying over the hostile aeroplane alights on the planes of it, the bomb being caused to explode by the impact of alighting. This explosion is sufficient to put the aeroplane out of action, or to ignite the gas of an airship. The pigeon, of course, pays with its life for its unconsciously warlike action." It looks, however, like being a bit rough on the neutral.

× × ×

Taking full advantage of the calm weather last week, the various schools at Hendon got through an enormous amount of school work. Pretty well every available machine was in use, and the air over the aerodrome was literally full of flyers, steering in all directions, the continuous droning reminding one more than anything of the vicinity of a beehive on a hot summer's day. Wherever there was a clear space, keen pupils were practising as hard as they could, some rolling, others doing straights, right-hand turns or "ticketing." Pilots were out on all sorts of machines from slow school biplanes to fast scouts, and the few days' reasonable weather must have meant great progress towards proficiency by many budding pilots.

× × ×

A week or so ago considerable interest was aroused by the appearance of the new gun-carrying biplane designed by Mr. G. de Havilland and built by the Aircraft Co. The first time out Mr. de Havilland demonstrated his faith in the new machine by taking it up to nearly a thousand feet. Later the gun-carrier was taken up by Mr. Birchenough, who gave an excellent report of its behaviour in the air. On Saturday last Mr. de Havilland was again putting it through its paces, including some steeply-banked left and right hand turns. On one occasion he covered two circuits of the aerodrome holding his hands above his head to show that the stability of the new machine was such that she only needed steering and no other control. The long rear edge of the wing tips and the dihedral angle give the machine a very graceful appearance when in the air, and for a 'bus of the "pusher" type she certainly seems very fast. I shall not be in the least surprised if in the future machines of this type make their appearance at regular and very short intervals, are tested and then disappear gracefully away beyond the Welsh Harp in the direction of—well, say Staines.

× × ×

Another new machine arrived at the aerodrome on Saturday. The newcomer has been designed and built by Messsr. Mann and Grimmer, the well-known model constructors, and is of unusual appearance. From an inspection of the various parts, as they lay in the L. and P. sheds, it is evident that, when erected, she will be a *fuselage* biplane with two "pushers." The body is very deep and covered with aluminium in front, whilst the rear portion is covered with fabric. The two seats are arranged in tandem, the pilot sitting far back and the observer being placed immediately behind the engine plate in the nose of the body. I learn that a 100 h.p. Anzani engine will be fitted, and as the new machine is of such original form, her performances will be watched with interest.

× × ×

The little "seven-day 'bus," P. B. 9, was doing quite a lot of air work at Hendon on Friday, and seemed to be very fast considering that she is fitted with an engine of only 50 h.p. She is not, of course, as fast as, for instance, the Sopwith scouts, but then it must be remembered that the difference in h.p. is very considerable. Several times landings were effected at low speeds—without knowing actual figures, I should say well under 40 m.p.h.—and she was cleverly handled by the naval officer at the helm.

× × ×

Both *habitués* and visitors at Hendon were treated to a fine display of flying on Saturday afternoon by Mr. F. Goodden, who arrived from Farnborough on a new B.E. 2c. biplane accompanied by a passenger, Mr. H. R. Harker, of the R.A.F. While watching the school work in progress, a peculiar crackling noise, seeming to come from the direction of the Welsh Harp, attracted everyone's attention. Soon a biplane was seen to emerge from the slight haze, and the rounded wing tips and narrow body immediately made it recognisable as a B.E. Coming in over the sheds at what seemed to be a terrific pace, the machine commenced a series of left and right hand turns and switch-backs. By this time all who know Goodden's style were pretty certain of the identity of the "man at the wheel." It is a peculiar thing, and may sound almost incredible, but I think that all who have had an opportunity to watch closely and observantly the flying of a certain pilot will agree that it as easy to identify a man with his methods, if be a really good pilot, as it is to recognise a man by his walk. It seems that a pilot with long experience develops little mannerisms of his own, by means of which he may be recognised. After a few demonstrations of flying at low speeds, the machine came to rest by No. 1 pylon, and soon an admiring circle had gathered round it to greet Goodden and his passenger.

In the short interval before the B.E. 2c. was put into its shed a number of pilots and pupils took the opportunity of inspecting it, and well it deserved an examination.

× × ×

While enjoying "the cup that cheers, &c." Goodden, in detailing his experience with the machine, was very enthusiastic, and as he has flown several different types of machines and has a good knowledge of both construction and design, his opinion is worth listening to. He has attempted pretty well everything he could think of to test the stability, such as looping, tail sliding, &c., and in all cases the machine behaved perfectly. On several occasions he has tried to do a vertical bank whilst flying in a straight line to see if she would side slip, letting go of the control when the wings were vertical. Sliding down gently, she gradually straightened out, overshot the horizontal slightly, returned to it again, and proceeded as if nothing had happened. The inherent stability is so perfect, Goodden says, that once you have reached the desired altitude you can cuddle up comfortably inside your cockpit and read a book, and unless you want to go in any particular direction the 'bus needs no attention whatever. Her maximum speed with two up and full load is over 80 m.p.h., which is distinctly good for an engine of 70 h.p., and the landing speed can be brought down to well under 40 m.p.h. As a flying machine, therefore, the B.E. 2c. is one of which any designer may be

proud, and as regards her construction, which naturally there was little opportunity to examine in detail, Goodden expresses the opinion that she is "as strong as a house," and, knowing him as I do, I am quite willing to take his word for it.

× × ×

On Sunday Goodden, by way of giving another demonstration of the capabilities of this machine, went up, and did one of the finest loops it has ever been my good fortune to see. What impressed me most was the size of the loop, which seemed much greater than one is accustomed to see. There was no flapping out of the top of the loop and no perceptible deceleration on the upward sweep or mad tumble on the downward portion. The speed appeared nearly constant throughout the whole loop, although it could not, of course, have been absolutely so.

Shortly after landing on Saturday, Goodden went for a short spin on one of the little 35 h.p. L. and P. biplanes which must have felt a little strange after the B.E., but on which he nevertheless managed to do a very pretty flight. Although he is by no means a light weight, Goodden said he had difficulty in keeping the machine from climbing, which speaks well for the little biplane as well as for the Anzani engine.

× × ×

Speaking of the L. and P. biplane reminds me that one of the pupils of this school, Mr. C. Collett of New Zealand, obtained his "ticket" the other day after only 3¼ hours' tuition. He had only been at the school for about three weeks. Considering how many of them have passed through the school stage quickly and turned out really fine pilots, it would seem that our cousins from the Southern Hemisphere have a peculiar aptitude for learning to handle the control lever.

× × ×

The Ruffy school at Hendon has received a valuable addition to their staff, for I hear that M. E. Baumann, who, as my readers are aware, has been doing such good instruction work at the Beatty school, has become interested in the Ruffy firm, where he will in the future act in the capacity of chief instructor.

M. Baumann has, of course, had a lot of experience on the Caudron biplanes, as he obtained his *brevet* on one of these machines, and later acted as instructor at the school. Assisted by the James brothers, Baumann should indeed be a tower of strength in initiating pupils into the ways of the Caudron biplane.

× × ×

I do not happen to know who at present holds the record for the shortest period of tuition, or whether it still stands to the credit of Lieutenant N. Pemberton-Billing (his would assuredly take a lot of beating), but a very creditable performance was that of one of the pupils at the Hall school, Mr. J. Lloyd Williams, of the Public Schools and University Corps, Royal Fusiliers, who has just obtained his *brevet* after only 163 minutes, or 2 hours 43 minutes, tuition, covering a period of 13 days. Mr. Lloyd Williams was in camp at Epsom with his Battalion, and was therefore only able to attend the school once or twice a week, having to obtain special permission from his commanding officer each time. The "ticket" was a very good one, and in the altitude test the barograph registered 1,650 ft. By the way, I hear that quite a number of the members of this corps have joined, or are joining, the R.F.C., so that we may expect to hear further of some of them if Mr. Lloyd Williams may be taken as a fair example of the corps. "ÆOLUS."

Copyright, F. N. Birkett, from the F.N.B. Series of Aviators.

Mr. J. Lloyd Williams, who took his ticket at the Hall Flying School, Hendon, in 163 mins.' actual training time spread over 13 days.

⊛ ⊛ ⊛ ⊛

U.S. Consul at Dunkirk Protests.

WRITING from Boulogne on the 29th ult., a *Daily Telegraph* correspondent said that Mr. Benjamin Morel, American Consul at Dunkirk, has sent a protest concerning the recent air-raids made by the enemy on that town to the American Ambassador at Paris, in the following terms :—

"One of the bombs thrown last Friday on Dunkirk fell at a distance of two yards from my house, killing and inflicting serious injuries on several persons. My son and myself, who entered our house at that moment, just escaped being killed. I was hurt on the head by falling glass. The number of bombs thrown by the Germans, and the height, about 2,000 metres, at which the aeroplanes were, seem to prove that the missiles were thrown at hazard."

How to Combat Raiders.

IN a letter to the *Daily Chronicle* on the 2nd inst., Mr. J. Cathcart Wason, M.P., made the following suggestion as to a method of dealing with raiders :—

"While the magnificent courage and tenacity of our Fleet fills our hearts with praise and thanksgiving, further measures and precautions might yet be taken. Our fishing population is very sore pressed at the present time, and has been since the war began. Hundreds of trawlers and steam drifters are rusting, and the hardy seamen furnishing their crews are hard pressed to keep their families going.

"The Government might enlist the services of such ships and crews, put a responsible officer in charge, wireless apparatus and suitable guns, in addition to a fair wage, give a very substantial bonus for every submarine sunk or airship or Zeppelin brought down, and I think, very shortly, we would clear the seas of those who recognise no law, human or Divine, except that of 'Frightfulness.'"

FLIGHT

AIRCRAFT AND THE WAR.

A *Times* correspondent, in a message from Warsaw on January 28th, said :—

"For the third consecutive day Warsaw has been visited by German aeroplanes, while it is believed that several passed over the town during last night. About three o'clock this afternoon, which is the usual hour for these visitations, two Taubes approached from the west and cruised about over the town. One bomb was thrown and fell in the main street, a few hundred yards from the Bristol Hotel, and struck the cornice of the Hotel de Saxe, breaking the windows as it exploded, and shattering the cornice. No one, however, was injured. A Russian biplane flew up to engage the hostile craft, but the Taubes retired after being heavily bombarded by the Russian artillery outside the town.

"From frequent observation of the shrapnel attacks on aircraft, I believe that aeroplanes at any considerable height, flying at a rapid speed, are practically safe. I watched the shrapnel to-day bursting all about these machines, but without result, both the Taubes flying serenely back to their own lines 'to get their Iron Crosses,' as the people here say.

"The regulations regarding lighting are being rigorously enforced, and by 11 o'clock the entire town is in absolute darkness, the only visible sign of life being the twinkle of the sparks from the trolleys of the street cars. Warsaw, however, takes these demonstrations, of aeroplanes easily, and their flight over the city scarcely awakens more than a passing interest, hardly anyone taking shelter, even when an aircraft is directly overhead. There is much curiosity and speculation, however, as to the significance of this sudden aerial work."

Writing from Geneva on January 29th, a *Daily Chronicle* correspondent said :—

"The artillery battle for the possession of Altkirch becomes more violent every day, the guns being buried under the snow by the gunners on both sides to prevent their 'location' by aeroplanes, which cross and recross the frontier almost daily."

Mr. G. Renwick, writing to the *Daily Chronicle* from Cairo, on January 29th, said :—

"Observations made by airmen establish the fact that the enemy is withdrawing from their advanced posts. The effect upon them of aerial attacks appears to have been considerable."

Writing to the *Daily Telegraph* from Cairo on the 29th ult., Mr. W. T. Massey, said :—

"An unfortunate mistake resulted in the death of a French pilot and a British observer from a French hydroplane outside our lines. They had to leave the machine in the desert and were returning on foot. In the darkness which suddenly came on one of our patrols, took them for the enemy and fired, killing both.

"The enemy attacked our Kubri post, near Suez, but were easily defeated. There was no British loss. During patrolling work we found near the scene of the attack a wounded Indian from Scinde, who said he was an innocent pilgrim from the Holy Places, had been seized by Turks, sent to Maan, given a Mauser and ammunition, and compelled against his will to join in the attack upon his fellow countrymen. Wounded in the skirmish, he was delighted to fall into the hands of his own people.

"It is reported that the reason for the Turks withdrawing their advanced posts was because of the fright caused by the dropping of bombs from aeroplanes."

In a message from Northern France, dated January 30th, a *Times* correspondent thus describes the latest aerial attacks on Dunkirk :—

"Enemy aircraft made another attack on Dunkirk on Thursday evening. On former occasions, when they have attacked in the light of day, they have found the town prepared for them, and all the resources of artillery and aeroplanes have been ready to repel them. On this occasion they attacked by moonlight, hoping thus to approach the town unobserved. An aeroplane had made a test flight over the town on Wednesday evening and had succeeded in returning safely to the aerodrome at Ghistelles.

"On Thursday evening four or five aircraft attacked the town. It was a clear, moonlight night, but the first indication of their approach was the whirr of their engines. It was at first supposed that they were French airmen returning from an expedition, but the explosion of a bomb quickly destroyed the illusion. Anti-aircraft guns were quickly in action, and the sky was illumined with the flash of bursting shrapnel. The tocsin was sounded, the shops were closed, and in a few seconds the streets were deserted. Only a few officers remained in the streets to watch the progress of the fight."

Further information was furnished by a *Daily Mail* correspondent, who, in a description of the last raid, said :—

"More than sixty bombs, either explosive or incendiary, were dropped. The damage done was insignificant. The bombs fell all over the town, which is another proof that they are dropped haphazard. Notwithstanding the darkness and the fact that the French guns were firing at the intruders, several Allied aeroplanes got under way and went in pursuit of the raiders. One of them chased an airman to the Belgium frontier.

"The Germans are continuing to bombard Furnes. The Allies' airmen discovered two carefully hidden German guns which were damaging the town. The Allies' artillery at once destroyed them. So far no monument has been destroyed."

Mr. James Dunn, in a message to the *Daily Mail* from Rotterdam on Sunday, said :—

"Two Taubes which took part in a recent air raid in Flanders were pursued by several British aeroplanes, which, flying at a great height, overtook the Taubes near Nieuport. By swift eccentric flying and the explosion of black-powder bombs, which caused a thick smoke, the Taubes sought to escape, but, according to the correspondent of the *Handelsblad*, the British aeroplanes showed a pronounced superiority.

"One Taube turned turtle and was destroyed near Malo. The other got away."

A *Morning Post* correspondent, writing from Paris on Sunday, said :—

"M. Pégoud, the well-known aviator, has just distinguished himself by a remarkable feat. Information was brought in that there was an important depôt of ammunition near by, and M. Pégoud set off in an hour with bombs. He dropped to 1,800 ft., and despite a quick fire from the enemy's guns and cannon, dropped nine bombs, all of which reached their mark. The successive explosions caused so great an atmospheric disturbance that Pégoud had the greatest difficulty in recovering his balance, but at last he got back safely. A few days ago Pégoud brought down a German captive balloon and damaged two heavy guns belonging to the enemy."

A *Daily Telegraph* correspondent at Petrograd, writing on Sunday, said :—

"A paper published at Libau gives some details of the destruction near that port of the German airship, which, it appears, was of the Parseval type. The aerial cruiser appeared over the town at half-past nine on the morning of Monday last, at a height of 500 ft. It came from the direction of the sea. Continuing its course at varying altitudes, the airship sailed northwards, till it reached the Libau–Rowno Railway, and then, putting about, it made towards the east.

"At the moment when it descended nearest to the earth the dirigible discharged a cloud of smoke, which momentarily hid it completely from view. When the smoke cleared away it was possible to distinguish the flag and number of the airship, as well as the faces of those who were flinging bombs over the side of the car. The explosions of the projectiles brought crowds out into the streets, but, apart from a few panic-stricken women and children, the population preserved an admirable composure. Half an hour later the normal life of the town was flowing in its usual channels.

"Soon afterwards a large motor car dashed down the main street. Its passengers cheered, and shouted that the airship had been shot down by the Frontier Guard, twelve miles south of the town, and had fallen into the sea about a mile from the shore, and that the crew were being brought to Libau in a boat.

"Subsequently it appeared that as soon as the Parseval came in sight the commander of the Frontier Guard gave orders that it was to be pursued with motor cars. Getting within range, the guards opened fire, and soon brought the airship down. When it collapsed into the sea the crew waved the white flag, and were taken off by the Government tugs. The crew consisted of a naval officer, an army officer, and five men. The *débris* of the airship was destroyed."

A *Daily Telegraph* correspondent, in a message from Paris on Sunday, reported :—

"At 10.30 last night bombs were thrown (whether by aeroplane or Zeppelin not known) on Passy, probably in the Rue Louis David."

In a message from Copenhagen on Tuesday, a *Daily Mail* correspondent said :—

"Hostile flying machines, probably from Belfort, have dropped several bombs on Mulhouse, doing considerable damage to the railway station and also to the potash mine there.

"German aeroplanes tried to chase the French raiders, but they got away successfully."

Models

Edited by V. E. JOHNSON, M.A.

Regulating the Pressure in C.A. Plants.

THIS can be accomplished in two ways, either by means of a reducing valve acting between the reservoir and the engine, or by means of a throttle which opens more and more as the pressure in the reservoir falls. The latter can conveniently take the form of an air-tight piston or plunger working in a small bore cylinder in direct communication with the reservoir against the action of a steel spring; the throttle valve is carried on an extension of the plunger, and is made to open more and more as the air pressure behind the piston compresses the spring less and less. Obviously the steel spring should be adjustable, so far as its strength is concerned, by means of a small thumbscrew.

An extension of the plunger can easily, by means of suitable levers, act directly on the air tap, and turn it on more and more as the pressure falls. One has only to manipulate a compressed air plant by hand to see that a better *average* result can be obtained in this way.

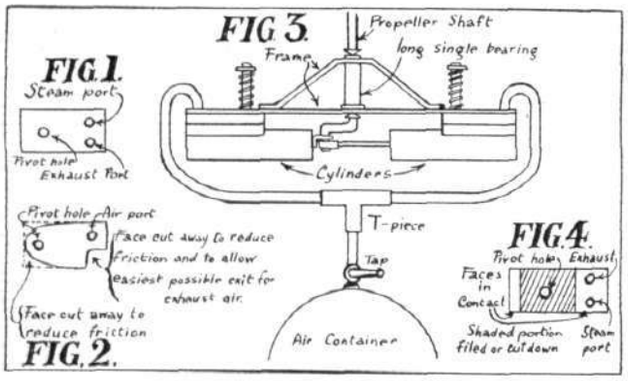
The air tap might also be opened more and more by means of a small aerial propeller working against a strand or so of twisted rubber through a suitable reduction gear, but the former idea is, we think, the better. When carrying out any series of scientific experiments with c a. models, it is not in any way essential that the models should be self launching; in the early days of model aeroplaning one or two very ingenious forms of catapult launchers were invented, and these might well be revived.

Our point is this: Say that a flight of 60 secs. is considered necessary for experimental purposes, but that when self-launched and without a throttle the model is only capable of 45 secs. The use of an automatic separate "launcher" and a throttle ought certainly to give us the other 15 secs. Another way out of the difficulty would be to launch the model not from the ground but from a height, even a small height would make a considerable difference.

During the next year or so we are quite sure great strides will be made in the development of c.a. plants for models, including not only model aeroplanes but models of many kinds, and we should strongly advise aeromodellists to experiment in this direction. A vast field for experimental work is here opened out, and one which we are quite sure will well repay a careful and thorough investigation.

Compressed Air Plant for Models.

We have received the following communication and sketches from Mr. Horace J. V. Stevens relative to our comments on his "c.a." model:—"My statement that my plant gave an r.o.g. thrust, by



H. J. V. Stevens' C.A. plant.

which I meant any thrust above one-quarter of the model's weight, for 15 to 20 secs., must not be taken as strictly accurate, as I had no means of accurately observing the time during which such a thrust is given. However, my father has in course of construction a recording thrust-tester consisting of a slowly revolving drum along which a pencil is drawn against the action of a spring by the thrust of the propeller. In this way graphical representation of the thrust given during the whole length of the run will be obtained. I hope soon to be able to send you particulars of any results I may obtain. This apparatus should enable me to determine accurately the time during which an effective thrust lasts, and in consequence to settle whether my engine does or does not leak abnormally. I am afraid that any engine which is easy running with a minimum of friction will find it difficult to pass your oil test for leakage. Packed pistons and glands add enormously to the friction of an engine, though they stop leakage. It seems to me that anything gained in the way of decreased leakage obtained by fitting packing, &c., would be lost by the increased friction set up thereby.

"As regards vibration set up by my engine when running. This is very slight indeed; the engine runs every bit as well as the three-cylindered Autoplan. The single-cylinder oscillating engine to which I referred in my previous communication certainly did vibrate very badly, especially at low speeds, but my double-cylindered engine does not do so.

"With regard to friction between the faces. In my engine I endeavoured to reduce this to an absolute minimum by a special design of face.

"The old type of face is roughly as shown in Fig. 1.

"On my engine, the face is of the design shown in Fig. 2.

"Mr. T. H. Harper's is not unlike my engine in general design, but it seems more complicated. A double crankshaft is unnecessary, and the piping arrangements are rather unwieldy. Fig. 3 is a rough sketch of my engine and connections, showing the manner in which a simple single crankshaft is used."

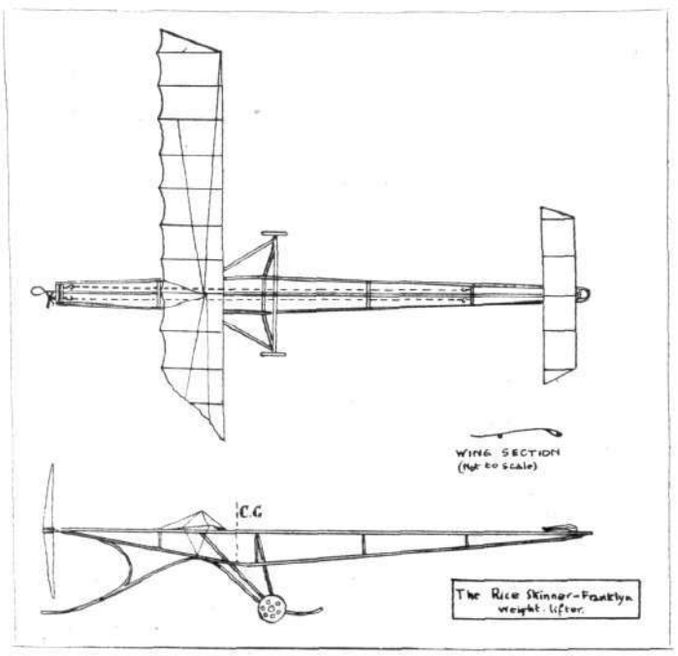
Since making our comments on Mr. Stevens' previous communication, we have seen a commercial three-cylindered single-acting oscillating engine, the piston faces being arranged at equal intervals of 120° as on the Autoplan plant. The fixed faces were of steel, and the engine was thoroughly well made. After asking the price (more than five times that of the Autoplan), there was no need to enquire its nationality. It would undoubtedly give a good thrust and fly a model if well supplied with air. Our chief bone of contention with respect to this type is, as already stated, the fact that the pressure tends to drive the working faces apart, and if you screw up the nut and tighten the spring you greatly increase the friction. We do not quite agree with our correspondent's remarks *re* the faces as illustrated in Fig. 1. Fig. 4 is a sketch of the fixed face in two small oscillating engines, purchased by the writer many years ago; the shaded portion, being at a lower level, is not in contact.

For the benefit of any reader who might like to try some experiments, with a three-cylindered motor as mentioned above, it may be worth while stating that such cylinders, &c., can be purchased from 10*d.* upwards.

The Rice Skinner-Franklyn Weight Lifter.

By J. RICE SKINNER (Hon. Sec. Twickenham and District Model Aero Club).

Main plane is entirely made of bamboo and covered with Clarke's "Flight" silk, and measures 5 ft. by 7½ ins. The trailing edge is very flexible, and is slightly flattened.



Rice Skinner-Franklyn weight lifter.

The elevator is also of bamboo, and measures 20 ins. by 4½ ins., and has a slight dihedral angle.

The *fuselage* consists of three *longerons*, the top two of silver spruce, ⅜ in. by ⅛ in., the bottom one being of split bamboo, approx. ⅜ in. by ⅛ in. The distant pieces are also of bamboo, and all joints are bound with silk ribbon. The total length is 5 ft.

The chassis is made of bamboo with the exception of the axle, which is of ash, and is socketed to the *fuselage*. The wheels are made of 4-ply veneer, with holes cut out at suitable distances, the hubs being made of "by-pass" tubing. A bamboo skid is provided to take the weight of the tail.

Motive power consists of two 4-ft. skeins of ¼-inch rubber, each skein consisting of 10 strands, which drive a 16-in. propeller of fairly low pitch (by the way, I have drawn in the drawings a tractor instead of a propeller screw). As yet the whole length of the *fuselage* is not used, as it was found that with 5-ft. skeins the rubber sagged so as to need two more strands a side.

The machine has only been out once, and, untuned, did 28 secs.; however, tuned up, the 'bus should put up a much greater duration, as the propeller runs for 75 secs.

The total weight (light) is 18 ozs., with weights 22½ ozs., bringing the loading up to just over 7 ozs. per sq. ft.

AFFILIATED MODEL CLUBS DIARY AND REPORTS.

Club reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

Monthly Report.—Owing to inclement weather no flying of importance has taken place during the past month. Members have, however, not been idle, several of whom have been working on compressed air models. Preparations have also been commenced in view of the research work, which will form the greater part of the club's programme during the coming season. The greater part of the flying ground has been surveyed and a plan to scale drawn out, by means of which two or more courses will be marked out and flights of models timed over them. Some interesting facts and figures are anticipated as a result thereof. At the annual general meeting on January 16th, the report and balance sheet was read and adopted. The finances were highly satisfactory, the balance in hand being the highest in the annals of the club. The usual votes of thanks were passed to those who had contributed to the success of the club during the past year. Mr. A. W. Perkins was unanimously re-elected president for 1915, Mr. W. E. Evans honorary secretary, and Messrs. R. Bird, T. Carter and H. S. Woolley committee-men. Mr. A. Rasmussen was elected to serve on the committee to fill the vacancy caused by Mr. F. W. Johnson joining His Majesty's forces. The club library received an addition of three new books presented by the secretary, viz., two bound vols. of the model section of FLIGHT 1913 and 1914, and the latest edition of "The Principles of Flight," making a total of 21 books. It was agreed to purchase out of the club funds a good foot pump with pressure gauge attached for use of members having models driven by compressed air. Anyone in W. or N.W. London interested in model flying is advised to communicate the fact to the hon. secretary, who will be pleased to forward particulars of membership. The club is the only one in or around London which has the use of a large private flying ground, which is easily accessible to those living in proximity to the Harrow Road trams or the District Railway.

South-Western Aero Club (373, BRIXTON ROAD, S.W.).

Monthly Report.—Not much work has been done again this month, but considering the unfavourable weather it is excusable. When the weather has been favourable Mr J. Read has been out with his triple gear tractor biplane with which he is conducting some experiments which are likely to be of considerable interest to members of this club. Mr. Dickeson has had his twin-propeller hand-launched model out, with which he has had some respectable durations. Mr. Osborne, who certainly believes in weight, has had his twin-geared tractor biplane out, which weighs 1½ lbs. No successful flights have been made owing to this model being much too heavily loaded. The hon. secretary read a paper on model aeroplanes, illustrated by chalk drawings. Will members endeavour to gather together more often in the clubroom, when perhaps some interesting discussions could be opened?

Stony Stratford and District Kite and Model Ae.C. (OLD STRATFORD).

Monthly Report.—Monthly meeting on Jan. 6th, business of a general club nature being transacted. Owing to the rough weather the postponed December competition was not carried through. The following members out practising, the wind varying on occasions up to about 40 miles per hour, best performance only 38½ secs. and 315 yds. by O. Hamilton, also with single hand-launched best only by O. Hamilton, of 22½ secs. and 235 yds. January competition, Jan 23rd Wind very gusty. 1st, O. Hamilton, 30·9 marks; 2nd, O. Hamilton, 29·2 marks, the best flights of competition being only 182 yds. and 24 secs. Mr. Mennell keeping up his usual performance of a better flight at the close of competition obtained a flight of 327 yds. and 39 secs., this performance qualifying with 88·1 marks in the Medal competition. It has been decided to circulate a club magazine amongst the members, dealing with the club work in all its phases, both of the serious and also humorous nature; the first number will be issued in February. As at present only one copy is being prepared for members' use, it will not be available till the close of the month of issue for loan to others interested. One of our members has carefully noted the direction of the wind, and states that it has held practically between N.W. and N.N.W. for five weeks up to about Thursday, Jan. 21st, the wind for the last two days being in the quarter N.W to N.E., dead N.E. for the competition and very gusty and rough. The committee invites suggestions for competition for junior members and novices by absent members.

UNAFFILIATED CLUBS.

Liverpool Aero Research Club (62, CEDAR GROVE, LIVERPOOL).

Monthly Report.—The absence of those members serving with the colours has been apparent, and this, with the unsettled weather, has made things rather quiet this month. Nevertheless some very good individual performances have been made. T. W. Bennett has been doing some exceedingly fine flying with his pet arrow-plane "canard" mono, which, despite the gusty winds, shows excellent stability. He has also had out his large arrow-biplane, which, when tuned up, should fly well. G. H. Kilshaw has been out with several models: h.l. and r.o.g. negative tip canard monos., and r.o.g. biplane. After attending Club-moor on the 16th, and adjourning to Sefton Park, some exceedingly fine flights were made with his r.o.g. 4-bladed screw tractor mono., although, being a very slow machine, considerable difficulty was found in getting the machine clear of the ground through strong gusts. Mr. J. Owens took a very clear snapshot during a flight of 34 secs. A notable absentee has been F. Lowe, whose good consistency of late has shown his keenness, although mention must be made of B. Tear and his r.o.g. biplane, which easily beats the rest of the club's double deckers. On the 23rd, some good sport was witnessed with r.o.g canards, a new and very promising high-flyer of V. Barrow providing a capable opponent for the rest present. It is with pleasure noted that the latter, together with F. Lowe, are contemplating building a man-carrying glider, and if this materialises some good sport should be provided. Several large machines are in course of construction—a twin-geared model by T. W. Bennett, two twin-gear tractor monos., 6 ft. and 4 ft., by G. H. Kilshaw, and another by B. Tear—so that something good is promised when the season proper commences.

Scottish Ae.S. Model Ae.C. (5, DOUNE QUADRANT, GLASGOW).

Monthly Report.—January 23rd, at Maxwell Park, Mr. G. Pinney was testing a large single-screw geared tractor with built-up and covered-in *fuselage*. Several splendid flights were made, one of which raised the official Scottish duration record for this type to 31 secs. The dimensions of this model are as follows:—Length, 37 ins.; span, 36 ins.; max. chord, 7¾ ins.; tail, 12⅝ ins. span by 8½ ins. chord; rudder, 6¾ ins. by 5 ins.; propeller, 12 ins. (A. W. Gamage, Ltd); power = 2 skeins of 7 strands ⅛ ins strip; cogwheels, 11/10 ins. dia (J. Bonn and Co.); duration, with 630 turns, 31 secs. Mr. Ian S. Ross was testing a small single screw tractor, getting quite good flights. Mr. H. M. Hill had also a model of the same type. Mr. Jas. C. Balden had out a new twin-screw tractor, but had the misfortune to meet with an accident on his second flight owing to over elevation. Members are again reminded of the waterplane competition on 6th March, at Maxwell Park.

Southend, Westcliff and Leigh Model Aero Club (96, VALKYRIE ROAD, WESTCLIFF-ON-SEA).

Monthly Report.—Several new records have been made during January, which include 20 sec. r.o.g. twin-tractor, 10 sec. r.o.g. single-screw. This model, which landed in a tree in the middle of the flight, gave great promise with greater space. New member tuning up twin-screw with spectacular flights. E. Woodfield flying tractor with excellent results. Workshop meetings Friday evenings.

Twickenham and District (74, CLIFDEN ROAD, TWICKENHAM).

Monthly Report.—The flying this month has been quite up to the usual standard in spite of the abominable weather, thanks to a few members, among these being Mr. Franklyn, who has had out a 3 ft 3 in. twin propeller machine, with 12 in. propellers driven by 6 strands of ⅛ in. rubber. This machine will be able, when tuned up, to put up durations of 90 secs. and upwards. The same member has also had out a 4 ft. tractor, obtaining fine r.o.g. flights, although the duration could be greatly improved by the use of gearing. Mr. Ferry brought out a very neat tractor, built-up body and laminated skid, also a 4 ft. hollow spar single propeller machine. Durations from 50-60 secs. Mr. Clayton, who is now in the R.N.A.S., celebrated his last flying day with the club by losing his extremely successful single-propeller machine, it flying out of sight. Messrs. Joyce, Brown and Beach have been out with some machines, the first two chiefly with twin-screw 'buses, the latter with a tractor. Messrs. Joyce and Brown were singularly successful, obtaining great heights and fine glides. During the time of the high winds, Messrs. Franklyn and Rice-Skinner constructed a "Gordon-Bennett" machine, and with plenty of rubber obtained speeds estimated at from 50 to 60 m.p.h. Mr. Rice-Skinner has had out the "aspect ratio" 'bus, which badly needs tuning up. As regards waterplanes, Mr. Franklyn tried his waterplane with two floats in front and one in front with greater success than with the floats the other way, and has handsomely beaten the respective records. The opportunity is taken here to thank the President for so kindly inviting the members on several occasions to tea at his house.

Promotion for Louis Noel.

THE good work being done by Louis Noel at the front is meeting its due reward in the way of promotion, and a postcard just received records that he is now "Sergeant Aviateur."

Aerial Patrol Over Paris.

IN connection with the work of the aerial patrol on duty round Paris it is interesting to note that Pilot-officer Lucca has been mentioned in despatches "for having given to the troops under his command a splendid example of courage, coolness, and skill, by executing, under dangerous conditions, a number of night flights above Paris."

Fatal Accident at Johannisthal.

ACCORDING to information received in Amsterdam, a collision between two aeroplanes took place in the air at Johannisthal on the 26th ult., resulting in the deaths of three aviators, including two officers.

Aircraft over the Baltic.

A *Daily Mail* correspondent, writing from Copenhagen on the 29th ult., said:—

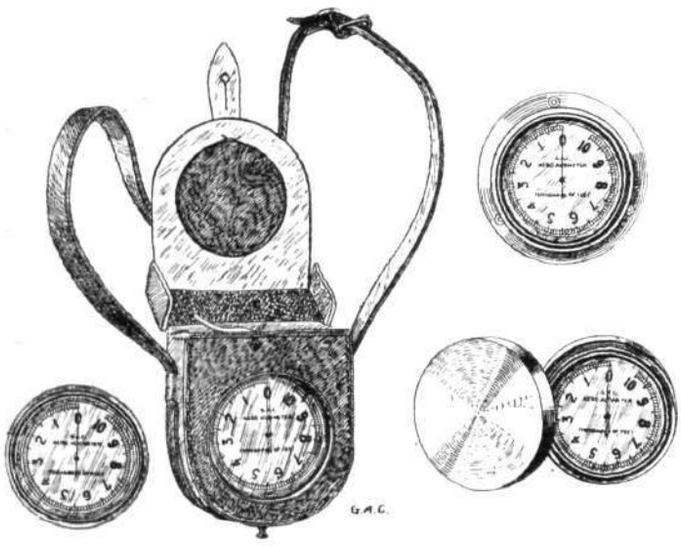
"During the last few days several German airships have been seen flying above the Baltic and proceeding in an easterly direction.

"The airships have always been several miles from the Danish coast. They have, however, been plainly visible, as the weather has been bright. They appeared to be of enormous size, and apparently different in shape from Zeppelins.

"The object of these excursions is believed to be to reconnoitre the Russian Baltic ports and bays of Finland.

SOME G.A.C. ALTIMETERS.

GENERALLY speaking, the most essential qualities which have to be considered by the designer of aviation accessories are accuracy and lightness, and the General Aeronautical Co., Ltd., of 50, Regent Street, London, S.W., are to be congratulated on the production of a series of new British-made altimeters, three types of which we are able to illustrate. As to the first point, it is sufficient to say that the mechanism, which is of special construction, is adjusted to the high standard required by the R.A.F. As to the question of weight, not only has it been found possible to reduce the dimensions to an extraordinary extent, but aluminium has been utilised as far as possible in the construction of the instruments. They are finished in several styles; on the left of our illustration one is shown in a neat leather case, with adjustable sling strap, and a hinged flap protecting the dial. The figures on the dial, boldly marked in black and red, read up to 10,000 ft.—the red figures, from 8,000 to 10,000 ft., indicating altitudes at which one might be considered safe from shell fire. The weight of this model minus its case is $4\frac{1}{2}$ ozs. The instrument on the right at the top is similar in most respects, but is fitted with a flanged back in order that it may be screwed on to a dash or instrument board. The dial has the same markings, and the weight of the complete instrument is 5 ozs. The instrument underneath is a pocket model, and is also similar in design. The casing is of somewhat heavier construction, and the face is protected by an exceedingly well-fitting cover, so that the weight of this model comes out at $6\frac{1}{2}$ ozs. If



required all these three instruments can be fitted with a dial recording meters instead of feet, or with one showing both. We understand that several of these are already in use by officers in our flying services, giving entire satisfaction. The prices range as follows: The pocket model, £3 17*s.* 6*d.*; instrument in case, £4 2*s.* 6*d.* complete; dash model, £3 10*s.*

A smaller model of similar design—reading up to 10,000 ft.—suitable for wearing on the wrist, is to be placed on the market shortly by the G.A.C., from whom further particulars may be obtained.

⊛ ⊛ ⊛ ⊛

PUBLICATION RECEIVED.

About the Seaplane School. The Northern Aircraft Co, Ltd., Bowness-on-Windermere.

NEW COMPANIES REGISTERED.

British Super-Zeppelin Co., Ltd., 154-6, Finsbury Pavement House, E.C.—Capital £100, in £1 shares. Objects, to experiment in balloons, aeroplanes, hydroplanes, airships, and aerostats, &c. First director, A. H. Fellows.

Civil, Nautical, and Mechanical Engineering Co., Ltd., Norbiton Park Garage, Malden Road, New Malden.—Capital £100, in 2*s.* 6*d.* shares. Civil, nautical, aeronautical, mechanical, and general engineers, &c. First directors, G. Blackman, F. Browne, and W. P. Cooke.

Sperry Gyroscope Co., Ltd.—Capital £2,000, in £1 shares. Manufacturers of and dealers in gyroscopes and gyroscopic appliances for steadying ships, aeroplanes, and all kinds of airships, &c. Under agreement with the Sperry Gyroscope Co., of Manhattan Bridge, Plaza and Flatbush Avenue, New York City. First directors, E. A. Sperry, R. E. Gillmor, and T. A. Morgan.

⊛ ⊛ ⊛ ⊛

ENEMY PATENTS RELATING TO AERONAUTICS.

THE following list of British patents which have been granted in favour of residents of Germany, Austria, or Hungary, is furnished in view of the new Patents Acts, which empower the Board of Trade to grant licences under certain conditions to British subjects to manufacture under enemy patents, and is specially compiled for FLIGHT, by Lewis Wm. Goold, Chartered Patent Agent, Enrolled Patent Attorney in the United States, 5, Corporation Street, Birmingham. It is desirable in the first instance to obtain a full copy of the patent specification (price 6*d.* each patent), and also the latest particulars upon the Patents Register. If any patent listed has been assigned to a non-enemy proprietor, the law does not apply.

No. 7989/12. Radiators. In a radiator, particularly applicable to cooling the circulation water in explosion motors on flying machines, separate cooling elements, consisting of plates, are connected through their headers and valves so that one or more elements may be shut off. Haegele, J. A., and Zweigle, G., Germany.

No. 13288/12. Aerostats; cars. Airship frames which comprise transverse girders braced by vertical, horizontal, and diagonal tie-wires are further braced by wires which connect points on the lower half with points on the upper half of the girder, and by wires which connect lower points together. The car is suspended from the girder. Schutte, J., Germany. Dated March 6th, 1912.

No. 14330/12. Parachutes. A parachute adapted to be carried by flying machines is normally held in a long cylindrical casing and is extended by springs when the casing is opened. Herrmann, M., Germany.

No. 16680/12. Aerial machines without aerostats; adapted to travel also on land, planes, arrangements and construction of; steering and balancing. Paul, C. W., Germany.

⊛ ⊛ ⊛ ⊛

Aeronautical Patents Published.

Applied for in 1914.

Published January 28th, 1915.

660. VICKERS, LTD., AND SIR A. T. DAWSON. Airship construction.
10,265. H. COANDA. Aeroplanes.
22,120. — GUSTIANA. Steering apparatus for aircraft.

Applied for in 1915.

Published February 4th, 1915.

1,043. J. NEALE. Apparatus for testing aeronautical appliances.
13,021. A. E., H. L., AND H. O. SHORT. Aeroplanes.
18,359. A. CLEMENT-BAYARD. Dirigible aircraft.
18,378. W. D. WHYTE. Compasses for use on aeroplanes.

FLIGHT.

44, ST. MARTIN'S LANE, LONDON, W.C.
Telegraphic address: Truditur, London. Telephone: 1828 Gerrard

SUBSCRIPTION RATES.

FLIGHT *will be forwarded, post free, at the following rates:—*

UNITED KINGDOM.	s.	d.	ABROAD.	s.	d.
3 Months, Post Free...	3	9	3 Months, Post Free...	5	0
6 ,, ,, ...	7	6	6 ,, ,, ..	10	0
12 ,, ,, ...	15	0	12 ,, ,, ..	20	0

Cheques and Post Office Orders should be made payable to the Proprietors of FLIGHT, 44, St. Martin's Lane, W.C., *and crossed London County and Westminster Bank, otherwise no responsibility will be accepted.*

Should any difficulty be experienced in procuring FLIGHT *from local newsvendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.*